

Patent Claims:

1.-10. Canceled

11. (New) A method of determining a differential pressure of a fluid by utilizing an electromagnetically drivable actuator (4) for pressure measurement, which actuator comprises an electromagnetic arrangement, in which a mechanical actuating element is movable by means of actuation of an exciter coil, and a valve actuating device for opening and closing the actuator, the method comprising the following steps:

exerting a mechanical force with the actuating element for opening and/or closing the actuator on the valve actuating device (1),

controlling the position of the valve actuating device or the magnetic force by means of an electric control circuit, and

measuring the hydraulic force acting on the valve actuating device.

12. (New) The method as claimed in claim 11,

wherein the hydraulic force acting on the valve actuating device is measured electrically by measuring the magnetic force that acts on the actuating element,

13. (New) The method as claimed in claim 12,

wherein the magnetic force is determined from magnetic flux.

14. (New) The method as claimed in claim 11,

including the step of opening or closing a passage between the closing element and a valve seat (3) by means of a resetting element (2) when the exciter coil is not excited.

15. (New) The method as claimed in claim 11, including the following steps:

determining at least one characteristic quantity included in the following groups: individual parameters, characteristic curves, and characteristic fields; and

determining a current, under consideration of at least one of these quantities, to position the valve actuating device.

16. (New) The method as claimed in claim 15,  
wherein the at least one characteristic quantity is determined by a calibration routine measuring the actuator in atmospheric pressure.
17. (New) The method as claimed in claim 16,  
wherein the calibration routine is performed in the completely opened and/or completely closed position of the actuator.
18. (New) The method as claimed in claim 15,  
wherein, for the determination of the at least one characteristic quantity, at least one of the following characteristics of the actuator is determined: opening travel, spring force  $F_{\text{spring}}$ , magnetic resistance of the actuator.
19. (New) The method as claimed in claim 15,  
wherein the actuator is mounted in a system, the method taking into account general parameters  $KG_{\text{gen}}$  related to the system in addition to actuator-related parameters  $KG_{\text{ind}}$  which are established in a measuring routine.
20. (New) The method as claimed in claim 15,  
wherein a current variation is applied to the exciter coil and the induced voltage is measured as a characteristic quantity.
21. (New) An electrohydraulic pressure control device including at least one electromagnetically operated actuator with an actuating element and a valve actuating device for controlling pressure,  
wherein the electrohydraulic pressure control device is capable of exerting a mechanical force on the actuating element for opening and/or closing the valve actuating device,  
controlling the position of the actuating element or the magnetic force by means of an electric control circuit,  
measuring the hydraulic force acting on the valve actuating device.